How Ambient Air Monitoring Stations Work in the Reykjavik Metro Area

When it comes to air pollution, it is important for all stakeholders to realize from where it originates

THE CHALLENGE
For companies with factories it is often hard to know what is the true source of air pollution. Determining the origin, however, is essential for these companies to know if they are the cause of the pollution, or if it is emanating from other sources.

THE SOLUTION
One way to understand where air pollution begins is by correlating weather data with air quality data.

For example, in Iceland there are several ambient air monitoring stations in the Reykjavik metro area. The instruments they use are mainly of the type Thermo Fisher, Grimm, Airpointer, and Horiba. Weather stations are equipped with Campbell Dataloggers and RM Young Wind meter. The parameters measured are NO, NOx, NO2, H2S, SO2, and dust 2.5 and 10. Most often, the measurement sites are equipped with a weather station with instruments for wind speed and wind direction, as well as for temperature, atmospheric air pressure and RH%. Each station is equipped with a data logger and telemetry, and all data is collected and stored in a Vista Data Vision® database.

The data shown here is from an ambient air monitoring station in the middle of an industrial park and close to a highway. Most commonly, such data is presented on trend graphs where it is easy to get the general overview.

There are several Vista Data Vision applications that are especially useful for this kind of ambient air data analysis, including the Wind Rose and Filter Wind Rose, the Intensity Plot, and the XY-graph. These applications help determine the pollution source in a shorter amount of time than competing applications.

THE RESULTS
Using the Wind Rose helps to conclude that SO2 is coming from the industrial facility, but H2S and NO2 are not. H2S originates from a geothermal plant located northeast of the monitoring site, and an increase in NO2 is related to peak commuter hours of between 7 a.m. and 9 a.m., and 3 p.m. and 5 p.m.
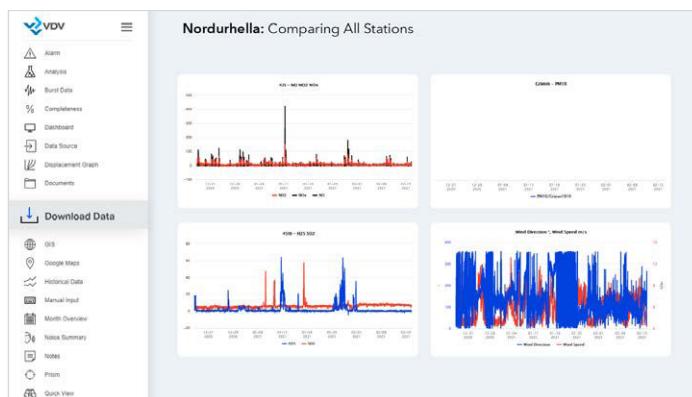
Two months of data are shown on the graph. While this presentation is informative it is hard to make any conclusions about the origin of air pollution by just looking at the trend lines.
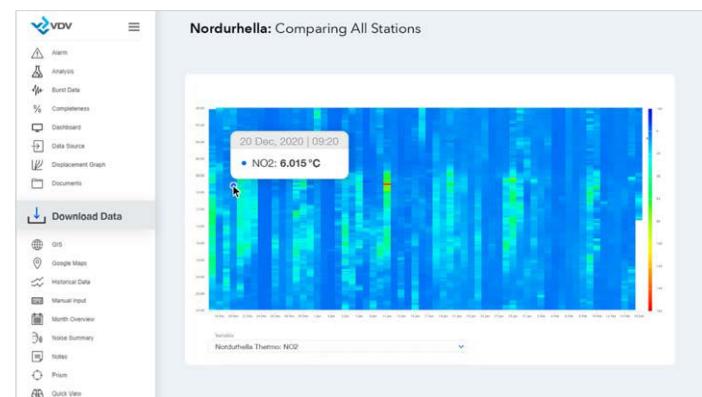
Two months of NO2 data is plotted on the Intensity Plot. Clearly, the concentration is highest from Monday to Friday, from 8 a.m. to around 11 p.m.. Therefore, the strength of NO2 is highly connected to working hours and traffic.

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